MARUSON®
TECHNOLOGY CORP.
Power Solutions for All Your Needs

Maruson Technology Corp
18557 E. Gale Ave. City of Industry, CA. 91748 U.S.A
P.O. Box 1986 Walnut, CA. 91788 U.S.A
Tel: 1-626-912-8388, Fax: 1-626-912-8680 Toll Free: 1-888-MARUSON
E-Mail: Info@MarusonUSA.com Web:www.MarusonUSA.com.
©Maruson Technology Corp. all rights reserved Maruson is a registered USA company.

MARUSON®
UPS SYSTEMS

USER'S MANUAL

1st Edition

Uninterruptible Power System

PRO-Rack-01

NOTES

The following parts will be sent together in the box :

1.) UPS
2.) USB cable
3.) RS-232 cable
4.) RJ11 cable
5.) Power Management Software
6.) Ears & screws for tower or rack-mounting

IMPORTANT SAFETY INSTRUCTIONS

Thank you for selecting this uninterruptible power system (UPS). It provides you with better protection for connected equipment.

Please read this manual !

This manual provides safety, installation and operating instructions than will help you derive the fullest performance and service life that the UPS has to offer.

Please save this manual !

It includes important instructions for the safe use of this UPS and for obtaining factory service should the proper operation of the UPS come into question.

Please save or recycle the packaging materials !

The UPS`s shipping materials were designing with great care to provide protection from transportation related damage. There materials are invaluable if you ever have to return the UPS for service. Damage sustained during transit is not covered under the warranty.

CONTENTS

PAGE

1. CAUTION……1

2. INTRODUCTION

   SYSTEM DESCRIPTION……2
   FEATURES……2

3. SYSTEM CONCEPT

   BLOCK DIAGRAM……3
   NORMAL OPERATION……3
   AC UTILITY FAILURE……4

4. OVERVIEW

   FRONT PANEL……5
   REAL PANEL……5
   PICTURE……6

5. INSTALLATION AND OPERATION……8

6. COMPUTER INTERFACE……9

7. BATTERY FACTS……10

8. SPECIFICATIONS……11

9. TROUBLE SHOOTING……13

NOTES

NOTES

CAUTION

- The UPS contains voltage that is potentially hazardous. All repairs should be performed by qualified service personal.
- The UPS has its own internal energy source (battery). The output receptacles may be alive even when the UPS is not connected to an AC supply.
- The UPS is suitable for computers and electronic equipment with substantially rectifier or capacitive loads, not suitable for electronic equipment with significant inductive loads, such as motors & fluorescent lamps.
- Be sure to operate within the power rating of the UPS. Below 1/2 or 1/3 of rated power is recommended for longer backup time & longer battery life.
- Do not place the UPS near excessive humidity, under sunshine, or close to heat-emitting sources.
- If the UPS is out of order, please detach power cord and consult your dealer right away. Do not remove cover if there is no serviceable part inside.
- The unit should be supplied by grounded source. Do not operate the unit without ground source.
- The socket-outlet should be installed near the equipment and be easily accessible.
- Do not plug the UPS power cord into itself. That will result in a safety hazard.
- Installation should be performed by a qualified technician or electrician in accordance with local electrical codes.

INTRODUCTION

System Description

The product is line interactive UPS with the newest technology and powerful function. The Line Interactive UPS is with AVR function allows input voltage range from 75% to 125%, including on line voltage boost-up & buck down. Ideal protection equipment for critical connected loads.

In addition, This UPS provides advanced single telephone line or modem surge suppression through the modular connectors on the back panel.

The Line Interactive UPS and iMate monitoring software makes our computer operate intelligent and provides you with the ability of perfect protection of your critical devices.

Features

- Line interactive design.
- User-friendly LCD display.
- Provide boost and buck AVR to stabilize input voltage.
- Provides lightning, surge, overload, and short-circuit protection.
- Built-in CCCV battery charger and battery over drain protection.
- No load auto shutdown (Dip switch setup).
- Load level and Battery level display.
- Buzzer alarm auto-reset (Dip switch setup).
- Auto restart when AC recovery.
- Cold start function (Dip switch setup).
- Tel / Modem / Fax / Internet surge suppression.
- Bundle software：Automatically save your valuable files before auto shutdown.

TROUBLE SHOOTING

If the UPS failed to operate properly, please review the following checks firstly. If the problem remains, please consult sales agent for service.

- Is the Master power switched on?
- Is the UPS plugged into a correctly working outlet?
- Is the line voltage within the rating specified?
- Is the fuse on the rear panel blown?
- Is the UPS over loaded?
- Is battery not fully charged? Dead battery? Charger failure?

Please provide the following information when call for service.

1. Model number, serial number.
2. Date of the problem occurred, date of purchase.
3. Full description of the problem including load, LCD, and alarm status, installation condition, working environment, etc.

Trouble-Shooting Chart

Problem	Possible Cause	Caution To Take
No light, and no alarm (UPS not on)	Front panel switch in off position.	Turn on switch.
	Rear panel fuse burnout.	Replace fuse restart UPS.
	Power cord lose	Check input power.
No “Line-on LCD” light, and alarm beeps every few seconds.	Power cord lose	Check input power.
	AC Fuse burnout.	Replace fuse, if problem remains, call for service.
Backup time is less than the rating.	Battery is not fully charger failure.	Recharge the battery for at least 6 hours, re-test the backup time. If problem remains, call for service.

SPECIFICATIONS

		2500VA	3000VA
Function	Modem/Phone Protection	RJ-11/RJ-45	
	Lightning/Surge Protection	480joules	
	AVR (Auto. Voltage Regulation)	Boost/Buck	
	DC Start Function	Yes	
	Auto. Restart UPS	Yes	
	Over/Under Voltage Protection	Yes	
Environment	Safety Standard	CE (EN50091-1,EN62040-1-1)	
	EMC Standard	FCC Part 15 Class B,CE (EN50091-2,EN55011,EN61000-3-2,EN61000-3-3)	
	Operating Temperature	0 ~ 40℃ / 32 ~ 104℉	
	Relative Humidity	0 ~ 95%, non-condensing	
	Audible Noise	< 40dB at 1M	
Physical	Dimension (D*W*H)in./mm	19"*2U*18.31 in. / 19"*2U*465 mm	
	Net Weight	57.32lbs / 26kg	60.63lbs / 27.5kg

*Specifications may change at any time without notice.

*All trade marks belong to their respected owners.

SYSTEM CONCEPT

The purpose to present this chapter is to give you more precise conception about how UPS works..

1. Block Diagram

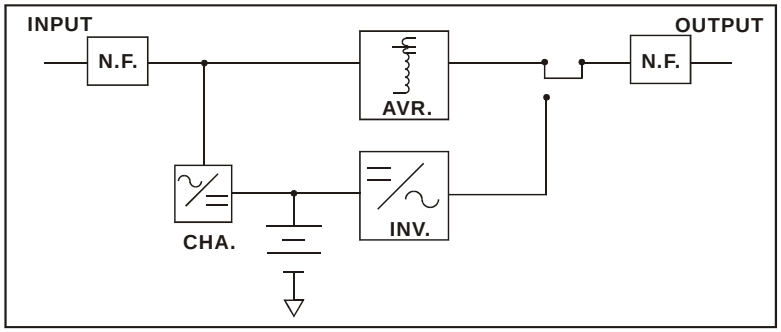


Fig. 1 shows how UPS works.

2. Normal Operation

There are two main loops when AC Utility normal the AC output loop and the battery charging loop. The AC output gets power from AC utility input and pass through AVR to support power to load. In the same time, the AC utility input is converted by AC/DC CHA and support charging power to charge batteries.

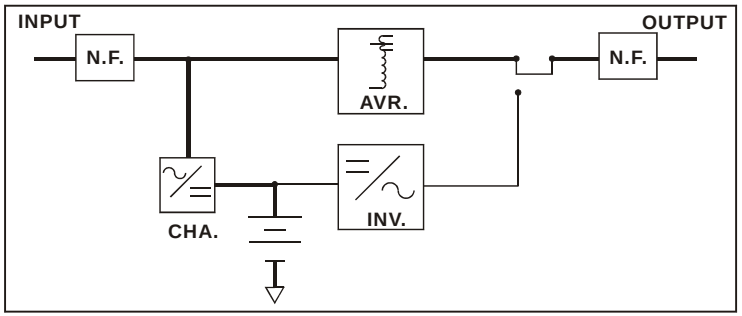


Fig. 2 shows how the UPS works when AC Utility normal.

SYSTEM CONCEPT

3. AC Utility Failure

If AC utility fails, the UPS quickly detects the problem and activates the inverter. The inverter. The DC/AC inverter changes DC power from the batteries into AC and provides continuous uninterruptible power to load.

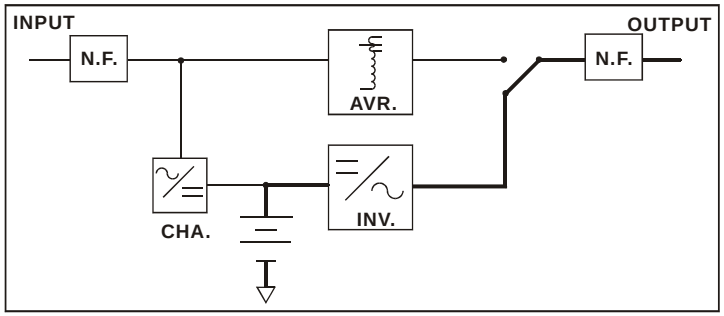


Fig. 3 shows how the UPS works when AC Utility Failure

SPECIFICATIONS

Capacity	VA	**2500VA**	**3000VA**
Input	Voltage	110/115/120VAC or 220/230/240VAC	
	Frequency	57Hz~63Hz or 47Hz~53Hz (auto sensing)	
	Input Plug	5-20P	L5-30P
Output	Voltage (Batt. Mode)	110/115/120VAC or 220/230/240VAC +/-10%	
	Frequency	50Hz or 60Hz +/-1Hz (auto sensing)	
	Waveform	Simulated Sinewave	
	Transfer Time	< 6ms (Typical)	
	Outlets:Battery/Surge only	Nema 5-15R/20R 6/2 Nema 5-15R*1pc for surge	Nema 5-15R/20R 6/2 Nema 5-15R*1pc for surge, L5-30R*1pc for battery
Battery	Battery Type (*Optional)	12V/7AHx4pcs	12V/9AHx4pcs
	Recharge Time	5Hrs to 90% after complete discharge	
	User's Replacement	Yes (hot swappable)* W/O Turning off the UPS	
	Battery Protection	Over discharge protection & Short circuit protection by fuse	
	Advanced Battery Management	Advanced Battery Management	
	Battery Back-up Time	It depends on connecting loads and external battery packs	
	**External Battery Bank(Optional	12V/7AHx4pcsx2sets	12V/9AHx4pcsx2sets
Indicator	LCD	LCD display for AC normal, Backup ,AVR protection, Load and Battery level, Overload and UPS cut off	
Function	Alarm	Buzzer on for Back-up mode, Battery low, Overload	
	Output Short Protection	AC fuse and Electronic circuit (Line mode): Electronic circuit (Back-up mode)	
	Communication Port (RS-232& USB)	Shutdown Software for Windows 95/98/NT/2000/ME/XP/Vista	

SPECIFICATIONS

		1250VA	1750VA
Function	Modem/Phone Protection	RJ-11/RJ-45	
	Lightning/Surge Protection	480joules	
	AVR (Auto. Voltage Regulation)	Boost/Buck	
	DC Start Function	Yes	
	Auto. Restart UPS	Yes	
	Over/Under Voltage Protection	Yes	
Environment	Safety Standard	CE (EN50091-1,EN62040-1-1)	
	EMC Standard	FCC Part 15 Class B,CE (EN50091-2,EN55011,EN61000-3-2,EN61000-3-3)	
	Operating Temperature	0 ~ 40℃ / 32 ~ 104℉	
	Relative Humidity	0 ~ 95%, non-condensing	
	Audible Noise	< 40dB at 1M	
Physical	Dimension (D*W*H)in./mm	19"*2U*18.31 in. / 19"*2U*465 mm	
	Net Weight	34.17lbs / 15.5kg	55.12lbs / 25kg

*Specifications may change at any time without notice.

*All trade marks belong to their respected owners.

OVERVIEW

Front Panel

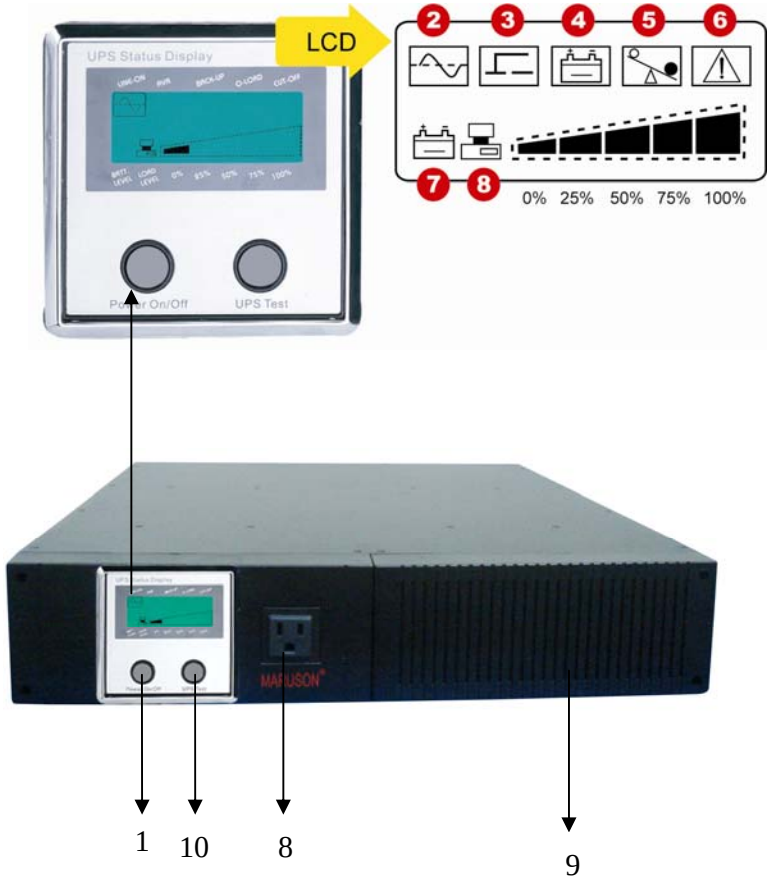
1. **Master Power Switch:** Turn on / off the UPS.
2. **Line-On:** AC Normal.
3. **AVR Protection LCD:** When AVR is working under protection mode, the light will turn on.
4. **Back-Up:** Battery in back-up
5. **Over Load:** If the UPS is overloaded, the light will turn on and the alarm will sound continuously.
6. **UPS Cut-Off:** Overload or Cut-off
7. **Battery Level:** A bar graph showing how much of the UPS battery is being used.
8. **Load Level:** A bar graph showing how much of the UPS power is being used.
9. **Hot swap battery**
10. **UPS Test Switch:** When UPS is working under AC mode, it also activates the UPS's self-test by press the bottom.

Rear Panel

1. **Outlets**
2. **AC Input**
3. **AC Fuse**
4. **Tel / Modem Spike Projection Port:** Telecom transfer ports provide users to extend the applications.
5. **Communication Interface Port:** This socket combines relay contact signals and RS-232 signals (Option) on DB9 connector.
6. **UPS Function Set up**
7. **Communication Interface Port: USB Port**
8. **Surge Protection Only**
9. **External Battery Connector**

Picture:

Front Panel:



SPECIFICATIONS

Capacity	VA	**1250VA**	**1750VA**
Input	Voltage	110/115/120VAC or 220/230/240VAC	
	Frequency	57Hz~63Hz or 47Hz~53Hz (auto sensing)	
	Input Plug	5-15P	
Output	Voltage (Batt. Mode)	110/115/120VAC or 220/230/240VAC +/-10%	
	Frequency	50Hz or 60Hz +/-1Hz (auto sensing)	
	Waveform	Simulated Sinewave	
	Transfer Time	< 6ms (Typical)	
	Outlets: Battery/Surge only	Nema 5-15R 6/3	
Battery	Battery Type (*Optional)	12V/7AHx2pcs(*4pcs)	12V/9AHx2pcs(*4pcs)
	Recharge Time	5Hrs to 90% after complete discharge	
	User's Replacement	Yes (hot swappable)* W/O Turning off the UPS	
	Battery Protection	Over discharge protection & Short circuit protection by fuse	
	Advanced Battery Management	Advanced Battery Management	
	Battery Back-up Time	It depends on connecting loads and external battery packs	
	**External Battery Bank(Optional	N/A	
Indicator	LCD	LCD display for AC normal, Backup ,AVR protection, Load and Battery level, Overload and UPS cut off	
Function	Alarm	Buzzer on for Back-up mode, Battery low, Overload	
	Output Short Protection	AC fuse and Electronic circuit (Line mode): Electronic circuit (Back-up mode)	
	Communication Port (RS-232& USB)	Shutdown Software for Windows 95/98/NT/2000/ME/XP/Vista	

Remark : Battery with 4pcs is for long backup .

BATTERY FACTS

The battery is the only periodically serviceable parts in the UPS. An expected life is approx. 3~5 years. However, frequent long discharges or ambient temperatures above 80°F will shorten battery life. Therefore, it is recommended to replace the batteries every 3 years after initiating the unit.

Recharging the batteries every 3 months is necessary because it may cause the batteries to over-drain.

WARNING

Only a qualified technician should replace the battery. Batteries have high short-circuited current capacity; mistakes in connecting or disconnecting can cause connections to arc or weld and could cause severe burns.

STORAGE

The UPS should only be stored if the battery is fully charged. Avoid storage temperatures above 80°F as battery life is significantly shortened. Every 90 days remove the unit from storage and plug it in for 24 hours to recharge the batteries. Batteries may be damaged if left in storage and not recharge every 90 days.

IMPORTANT NOTICE

Please use same type and same rating of batteries for replacement.

Do not replace it with the battery that exceeds specified rating.

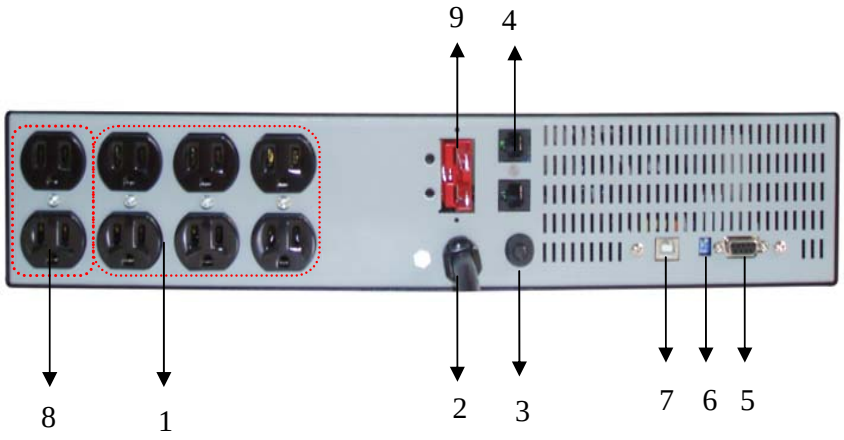
Your UPS contain Non-Spill Sealed Lead Batteries. On the battery you will find the battery name. Please refer to the chart on the right for recycling information. Other brand(s) of battery please contact Maruson Technology. If outside of USA or Canada, please contact your local authorized distributor.

If you have any question regarding to our product, please contact us at 1-888-MARUSON or e-mail us at Custsrv@MarusonUSA.com.

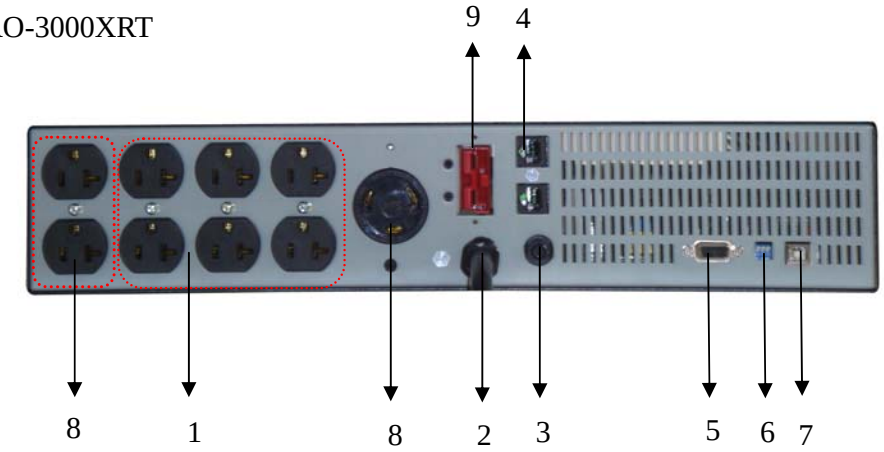
Battery Name	Recycling inside the USA
CSB Battery	1-800-RE-USE-PB (7387372)
Panasonic	1-800-SAV-LEAD
YUASA	(877)288-7722
LONG	202-719-4978

Rear Panel:

PRO-2500XRT (PRO-1250/1750ART w/o external battery connecter)



PRO-3000XRT



INSTALLATION AND OPERATION

Upon receipt of the UPS, inspect the shipping carton for damage. If there is any obvious damage, immediately report it to the selling dealer or the delivering carrier. If there is no damage to the shipping carton, unpack the unit and inspect the unit for damage.

The UPS is designed for installation in a protected environment within a temperature range from 32°F to 104°F and relative humidity of 0~90% without condensation. Do not block inlets and outlets. Install the system in a location free from excessive dust and chemical fumes.

Check the identification label to verify the UPS voltage and power rating match the available line voltage and load requirements.

Installation:

1. Check if the main switch on the UPS front panel is in the off position and insure that the voltage of the AC utility source corresponds to the nameplate on the UPS rear panel.
2. Plug the power cable into the grounded socket. If indicators of LINE-ON & CUT-OFF LCD light on, it mean AC power is normal, although UPS is under CUT-OFF status, it still will automatically start to charge by itself.
3. Push the main switch, then the Load Level LCD will light on for 2 seconds and CUT-OFF LCD will light off. The UPS will then get ready and start to work normally.
4. Connect your PC with UPS, and then turn on PC. Be sure to check the Load Level LCD indicator and DO NOT OVERLOAD it over 100%. To simulate AC failure (Simply by disconnecting the AC power) can help to insure whether UPS is in good condition or not. It is designed to alarm every 3 seconds and with BACK-UP LCD light on when simulation starts. If the CUT-OFF LCD is on, it means UPS fault or BATTERY fault. Then you have to contact your local service center
5. When battery approaches low level, alarm will beep every second until auto shut down
6. The 4 conditions UPS will automatically shut down:
   a. Battery low
   b. Short circuit
   c. Overload
   d. UPS fault

COMPUTER INTERFACE

The computer interface (DB9 port) on the back of the UPS may be connected to a host computer. This port allows the computer to monitor the status of the UPS and control the operation of the UPS. The iMate, provides complete On-Screen power management to the UPS and computer systems. Its major functions normally include some or all the following:

- Real-time UPS status on screen.
- All history records in memory.
- Auto orderly shutdown for computer & UPS.
- Multi-server support.
- Auto file save even without filename preset.
- Scheduled switch on/off daily or weekly.

Pin out information:

PIN#	Description	I/O
PIN1	Battery low, normally open, active close	Output
PIN2	N.C.	
PIN3	Common Ground	
PIN4	Remote shut down, keep this pin high (+5~+12V) for 3S will turn off the UPS	Input
PIN5	N.C.	
PIN6	N.C.	
PIN7	Must keep in high state	Input
PIN8	Line fail, normally open, active close	Output
PIN9	N.C.